

Title	Investigating the Next Generation of Design Researchers
Type	Article
URL	https://ualresearchonline.arts.ac.uk/id/eprint/14897/
Date	2019
Citation	Rodgers, Paul A. and Mazzearella, Francesco and Conerney, Laura (2019) Investigating the Next Generation of Design Researchers. The Design Journal, 22. pp. 1467-1480. ISSN 1756-3062
Creators	Rodgers, Paul A. and Mazzearella, Francesco and Conerney, Laura

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The Design Journal

An International Journal for All Aspects of Design

ISSN: 1460-6925 (Print) 1756-3062 (Online) Journal homepage: <https://www.tandfonline.com/loi/rfdj20>

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To cite this article: Paul A. Rodgers, Francesco Mazzearella & Loura Conerney (2019) Investigating the Next Generation of Design Researchers, The Design Journal, 22:sup1, 1467-1480, DOI: [10.1080/14606925.2019.1594971](https://doi.org/10.1080/14606925.2019.1594971)

To link to this article: <https://doi.org/10.1080/14606925.2019.1594971>



Published online: 31 May 2019.



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Investigating the Next Generation of Design Researchers

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Abstract: This paper explores the opportunities, challenges and needs of the next generation of design researchers (NGDRs) in the United Kingdom. As part of the first author's ongoing Arts and Humanities Research Council (AHRC) Design Leadership Fellowship, the paper reports on a series of ten NGDR workshops held across the UK, which explored the processes involved in developing, writing, and applying for an AHRC grant. The paper presents feedback from the NGDR workshop participants, who contributed to furthering our understanding of what research areas they are interested in investigating, what research-related issues they need support with, and what research opportunities they envisage for the future. Over 800 next generation design researchers attended the NGDR workshops across the UK. This paper reports on feedback from almost 200 NGDR workshop participants who articulate the highly collaborative, innovative and impactful design research they wish to undertake in the future.

Keywords: Design research, Next Generation Design Researchers (NGDRs), AHRC Design Leadership Fellowship

1. Introduction

The UK is responding to the fourth industrial revolution, whilst it is facing unprecedented challenges such as stagnant productivity levels, unequal economic growth across its regions, a rapidly increasing ageing population, and automation's increased impact on living conditions and job security (Design Council, 2018). At the same time, the UK is seeking to establish a new vision for its place in the world, negotiating its exit from the European Union and developing new trading partnerships. However, with these significant challenges come opportunities for socio-technological innovation, and design researchers and practitioners – thanks to their skills in creative thinking, social perceptiveness, analysis, synthesis, and visualisation – are well-placed to tackle these issues head-on (World Economic Forum, 2016; Nesta, 2017). Within this context, the UK Government has launched an Industrial Strategy, investing more than £80 million to catalyse economic growth and develop the skills needed for future jobs (HM Government, 2017).

The UK has an international reputation as one of the world's leading centres of design excellence. Many of the most critically acclaimed global designers have passed through the UK's design education system and many UK design graduates now head-up some of the biggest companies in the world. Moreover, several UK design schools regularly feature in surveys of the world's top

universities and many of these institutions produce cutting-edge design research and offer education that include inter-, cross-, multi-, and trans -disciplinary programmes linking design with other specialist areas such as business, computing, engineering, and healthcare. As such, UK design graduates are in high demand from global brands including Apple, Samsung, IBM and many others. The UK is also home to some of the world's most successful design organisations and iconic brands, such as Jaguar Land Rover, Virgin Atlantic, Dyson, and the BBC.

According to the Design Council (2018), the design sector is an important part of the UK economy, generating nearly £90 billion every year in gross value added (GVA). This equals to 7% of the UK's GVA and is equivalent to the size of the distribution, transport, accommodation and food sectors. This value has grown by 10% between 2014 and 2016, outstripping the UK growth rate during the same period (7%). The UK design economy has grown by 52% between 2009 and 2016, spreading across the UK economy, even beyond the creative industries. Designers operating in industries outside of the design sector – such as aerospace, automotive and banking – created the majority of this value (68%). There were 1.69 million people employed in design roles in 2016 in the UK, equivalent to employment in the hospitality sector. Hence, it is fair to say that design now makes a significant contribution to the UK not only economically, but also socially and culturally.

1.1 AHRC Design Leadership Fellowship – Design Research for Change

Within this context, the Arts and Humanities Research Council (AHRC) Design Leadership Fellow is developing a “Design Research for Change” initiative with the vision to achieve real development within the culture of design research leading to long-lasting transformation and impact on societies, cultures, economies, and the environment (Rodgers, 2018). To this end, the Design Leadership Fellow is working closely with the AHRC, a Design Theme Advisory Group (TAG) comprising twelve distinguished professors from some of the top design institutions in the UK, providing guidance and support on the strategic priority area of design, as well as researchers and practitioners in design and other disciplines. The aims of the Design Leadership Fellowship are:

- To increase both the quality and quantity of design-led research proposals;
- To strengthen the research capacity of the next generation of design researchers;
- To act as an ambassador for design research across all sectors of UK society;
- To use design research as a tool for delivering positive societal change.

A large part of the AHRC Design Leadership Fellowship's role is focused on early career researchers (ECRs) in order to support a growing number of talented researchers to overcome the challenges they face at the beginning of their academic careers (*i.e.* within eight years from the award of their PhD, or within six years from their first academic appointment). In fact, as evidenced by Nurse (2015), a number of early career researchers are worried that funding opportunities for them are drying up, or they don't receive enough support, or are not in a position to apply for large grants. This is at a time where research funding councils appear to be shifting away from funding for small grants towards longer and larger research programmes. Having these challenges in mind, and with the aim to advise the AHRC on its design funding schemes and ensure that they speak to relevant audiences, we facilitated a series of Next Generation Design Research (NGDR) workshops across the UK, exploring the processes involved in applying for an AHRC grant.

2. Methodology

In early 2017, with the aim of understanding better the design research landscape in the UK and the level of support received from the AHRC and other funding bodies we conducted an online survey, which received over 300 responses from design researchers across the length and breadth of the UK. Building on the findings and feedback from this survey that clearly requested greater levels of interaction amongst design researchers, we held a series of ten workshops across the UK (Figure 1). The locations of the workshops were specifically selected for their proximity to institutions that have recognised design departments and are looking to increase their levels of funding from the AHRC, in order to allow design researchers from these institutions to attend one of the workshops.

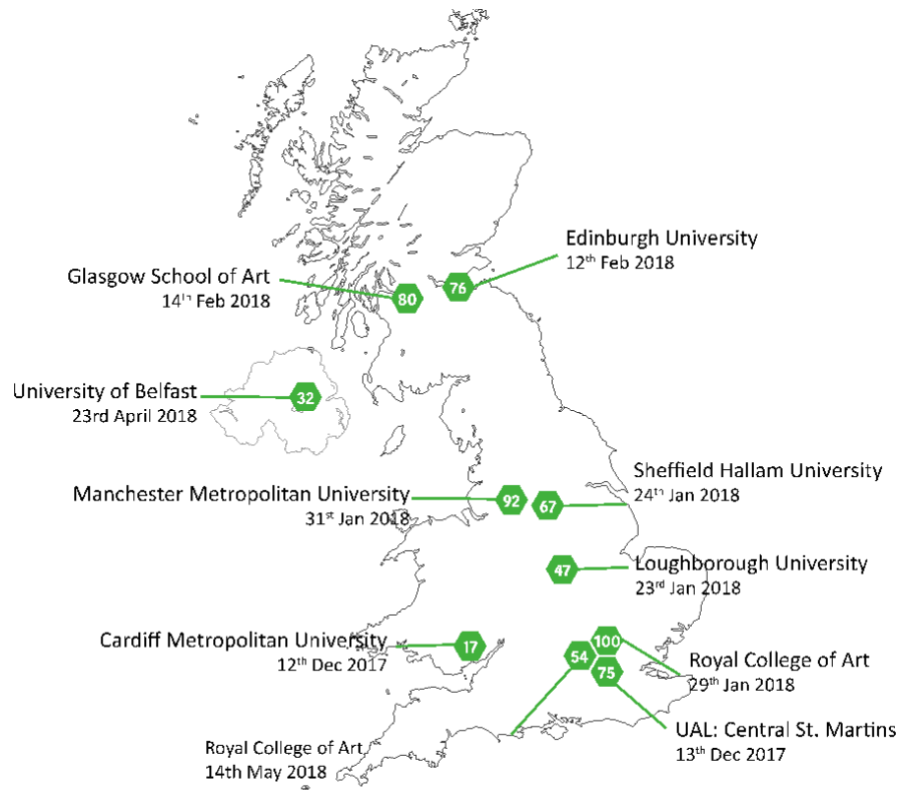


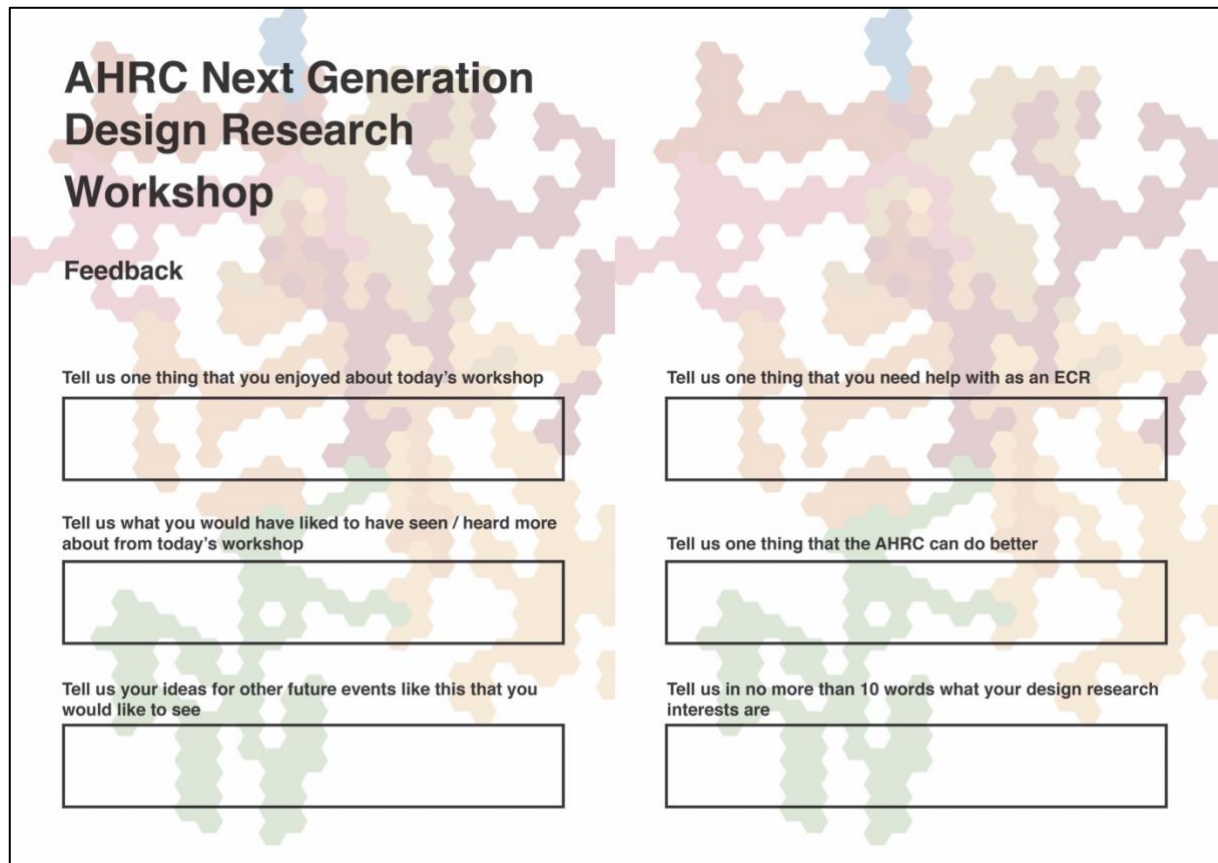
Figure 1. UK map showing the locations of the ten NGDR workshops.

Over 800 researchers in total registered to attend one of the workshops held between December 2017 and May 2018. Many of the workshops were heavily over-subscribed, which led us to adding further events. The half-day workshops provided an opportunity for the community of early career researchers in the UK to showcase their projects and share with their peers their experiences of writing and submitting their first AHRC research proposal, as summarised in Table 1. Here we can see that current research interests across some of the UK's leading design departments span subjects as diverse as dementia, anti-microbial resistance, healthcare, manufacturing systems, heritage, cartographies of conflict, and e-learning, to name but a few. The NGDR workshops also included presentations from the AHRC to help early career researchers navigate better the available funding schemes by highlighting what they fund and why. The workshops were also designed to provide ECRs with support from their host institutions' research office who outlined the processes involved in developing and submitting grant applications.

Table 1. List of current research topics presented by NGDRs at the ten workshops held across the UK.

Workshop Locations	Current Research Topics
Cardiff Metropolitan University	Design and innovation policy; low-cost social design solutions; design for people with dementia.
Central Saint Martins, UAL	Knowledge exchange, service design, public collaboration; collaboration through making, business model innovation in arts and cultural organisations, anti-microbial resistance; social digital design technologies; patient experience design.
Loughborough University	Design for enhancing the quality of life; service design for social innovation with textile artisan communities; ambition, impact and originality in outputs.
Sheffield Hallam University	Design theory in healthcare; customised masks for overnight respiratory therapy; social interactions through public benches; evidence contamination at crime scenes.
Royal College of Art	Knowledge exchange and design research; female munition workers' dress; graphic design of multimodal documents.
Manchester Metropolitan University	The role of archives in creative practice; future manufacturing systems; strategic design for social and economic growth.
University of Edinburgh	Rebuilding lost performance spaces; 3D printing for enhancing visitor heritage experiences; inequality in the creative economy.
Glasgow School of Art	Design strategy for economic growth; digital technologies for simulation and visualisation; participatory design in injury rehabilitation contexts.
Ulster University	Creative clay work and wellbeing; cartographies of conflict; sound art in post-conflict cities.
Royal College of Art (2 nd workshop)	Transdisciplinary research in public spaces; healthcare delivery, design with migrant communities, e-learning; design with people with autism.

A key part of each NGDR workshop involved collecting qualitative data from the participants on their perspectives for the future of design research (including their personal future research plans). Through a six-question feedback questionnaire (Figure 2), we collected almost 200 responses from the NGDR workshop participants in relation to - what they enjoyed about the workshops, what they would have liked to have seen or heard more, what ideas they had for similar future events, what they need help with as ECRs, what the AHRC could do better, and their design research interests. We transcribed the feedback forms and thematically analysed them following a process of data reduction, data display, and conclusion drawing, as advocated by Miles and Huberman (1994). We conducted the process of analysis manually as well as supported by NVivo software in order to identify themes in relation to the NGDRs' research interests, needs, and wants, using these as *a priori* codes deduced from the feedback questionnaire.



AHRC Next Generation Design Research Workshop

Feedback

Tell us one thing that you enjoyed about today's workshop

Tell us one thing that you need help with as an ECR

Tell us what you would have liked to have seen / heard more about from today's workshop

Tell us one thing that the AHRC can do better

Tell us your ideas for other future events like this that you would like to see

Tell us in no more than 10 words what your design research interests are

Figure 2. Questionnaire used to collect feedback from the participants at the NGDR workshops.

3. Results

Given the word limits of this paper, as well as considering the insights that may be relevant for a wider design academic community beyond practical feedback on the specific workshops which we held, in this section we present the results of the analysis of the data collected throughout the ten NGDR workshops in relation to the following themes:

- The Next Generation Design Researchers' future interests;
- What current issues the Next Generation Design Researchers need help with;
- What events and ideas the Next Generation Design Researchers would like to see more in the future.

3.1 Next Generation Design Researchers' Future Interests

This section presents the research interests of our sample of nearly 200 next generation design researchers, as visualised in Figure 3 and discussed below.

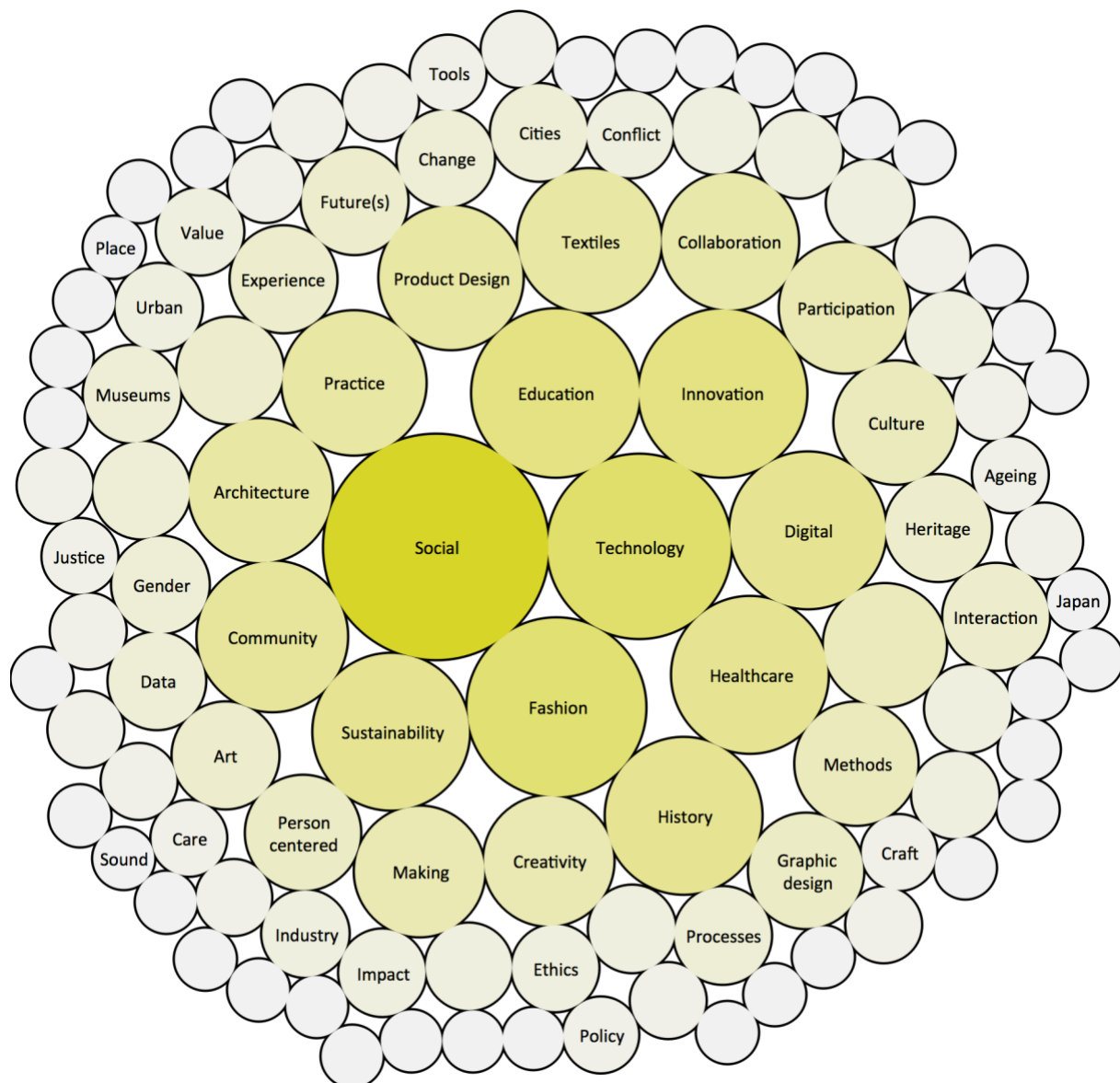


Figure 3. Research interests emerging from the analysis of the data collected from the NGDR workshop participants.

After normalising the NGDR participants' responses and removing articles and conjunctions (*i.e.* the, and, but) and the word 'design', Figure 3 was created using the 'packed bubbles' technique available in Tableau software, where the larger and darker colour bubbles represent the most frequent research interests. We can see that the majority of the NGDRs who responded are interested in social design, which includes human-centred, practice-based and participatory research approaches developed in collaboration with communities, with the main aim of producing social change. Another significant interest of the NGDRs lies within the field of fashion and textiles design, with a focus on materials and wearable technologies, incorporating electronic and reactive elements at the intersection between technological innovation and social dynamics. Many NGDRs said they are interested in participatory design approaches within health and wellbeing contexts, for instance practice-based research with an ageing population, disabled people, or post-amputees.

A large number of NGDRs are interested in design thinking – adopting co-design and open design approaches in the context of design for (public) services, policies and management. A strong research interest that emerged from the NGDR workshop participants lies at the intersection

between design history and theory with design practice. This involves collaborations with museums, studies of modern archaeology and material culture of places (*e.g.* East Asia), as well as the use of digital tools to preserve heritage and engage communities. Another research interest for a relatively large number of NGDRs lies within the notion of place and people's relationship to it (*e.g.* in relation to migration issues), as well as design implications ranging from interiors (*e.g.* in the context of health and wellbeing or school furniture), architecture, urban design, through to landscape and geography. Another strong research interest from our sample of NGDRs lies in the field of communication design, spanning graphic, interaction and information design, and including also data visualization and mapping. Other NGDRs' interests included product design, design practices and processes, as well as design for crafts and designing/making. Technological and digital innovations such as 3D printing and virtual reality, adopting speculative design approaches to future-looking scenarios lie within many NGDRs interests. Sustainability also emerged as a recurring research interest amongst our sample of NGDRs. Here, this includes environmental concerns such as the design of extended product lifetimes or the design for end of life, as well as social and ethical issues of sustainable development in developing global economies. A few NGDRs showed interest also in collaborating with other science disciplines, such as medicine, neuroscience, and biology, to name but a few. Other marginal NGDRs' interests lie around the notion of identity and its relation to places, issues of diversity, gender and class. Ethics emerged as a minor research interest, including issues of democracy, justice, and sustainable development.

3.2 Next Generation Design Researchers' Needs

From the analysis of the NGDR workshop participants' responses in relation to what they need help with and what they think the AHRC might do better, we drew the key insights visualised in Figure 4 and described in the text below.

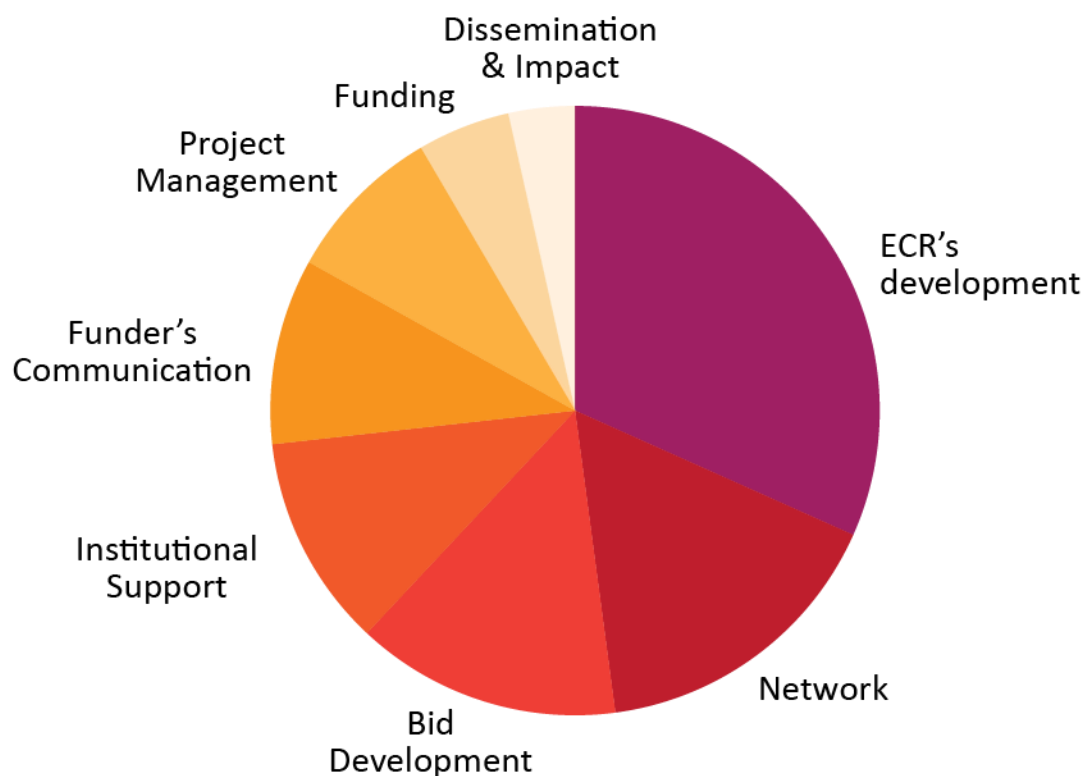


Figure 4. Results of the analysis of the issues which the Next Generation of Design Researchers need help with.

More than a quarter of the NGDRs responded that they need help with their personal development and planning of their research agenda (for instance through mentoring), as well as support in their transition from PhD student to early career researcher through to first academic employment. For instance, one of the workshop participants stated: *"[I need help with] knowing how to focus my research direction rather than being reactive to projects around time"*. Less than one quarter of the NGDRs argued for the need to network and collaborate with peer researchers across institutional and disciplinary boundaries. This need was clearly articulated by some of the NGDRs, who stressed that: *"...it is important to collaborate for funding, but who is doing what?"* and wondered: *"How do you find collaborators without having to trawl through the university web-profiles that are possibly out of date?"* Less than one quarter of the NGDRs also stated that they need help with the development of their project funding bids and expressed that training in bid writing would be very useful. Receiving more agile feedback on the proposals also emerged as a strong need for the NGDRs, with one stating: *"...the current process is long and drawn out. If you are unsuccessful, a lot of time is lost. Rapid failure will help ideas to evolve more quickly and further support the strongest projects being funded"*. The NGDRs also argued for the need to receive support in costing their projects and in articulating their pathways to impact, as well as to have access to examples of successful or rejected bids. Another idea was that of incorporating visual methods in funding applications; in this regard, one NGDR highlighted: *"AHRC researchers can often communicate very effectively using visual information and this is a missed opportunity to 'sell' our research"*.

Another key need for a large number of NGDRs is to receive more help with ethical information and greater support from their host institutions throughout the application process. This request includes opening up opportunities for NGDRs who are currently not affiliated to a University or employed on short-term contracts or for *"...women and those who had a lateral career (those who do have to work and raise family) and therefore have to postpone academic research"* as highlighted by one of the NGDRs in relation to the need to gain a foothold in design research funding. Several NGDRs argued for the need for clearer communication and avoidance of jargon from the AHRC on their funding opportunities and on the review process. In this regard, one workshop participant mentioned the need for: *"...easier to navigate funding guidelines, which are very daunting especially at first glance"*. It also emerged that NGDRs need help to better understand the research landscape in general. A need expressed by a small section of NGDRs regarded their day-to-day workloads and time management, having to: *"...juggle between massive teaching loads and moving the research profile forward"*. Some NGDRs also argued for the need to receive further research skills training.

A small percentage of our sample of NGDRs expressed the real necessity for funding, and in particular more seed-funding, for instance through: *"...more local pockets of action grants, almost as a form of career skills building that will support bid making"*. A few NGDRs also argued for the need to speed up the review process or to find alternative ways to submit their rejected grants to other funding schemes. Moreover, amongst the various issues that the NGDRs need help with, enhancing the dissemination of current research and identifying diverse pathways to impact were mentioned.

3.3 Next Generation Design Researchers' Future Wants

From the analysis of the feedback collected from the next generation of design researchers, we identified key ideas and opportunities for future events, as represented in Figure 5 and described below.

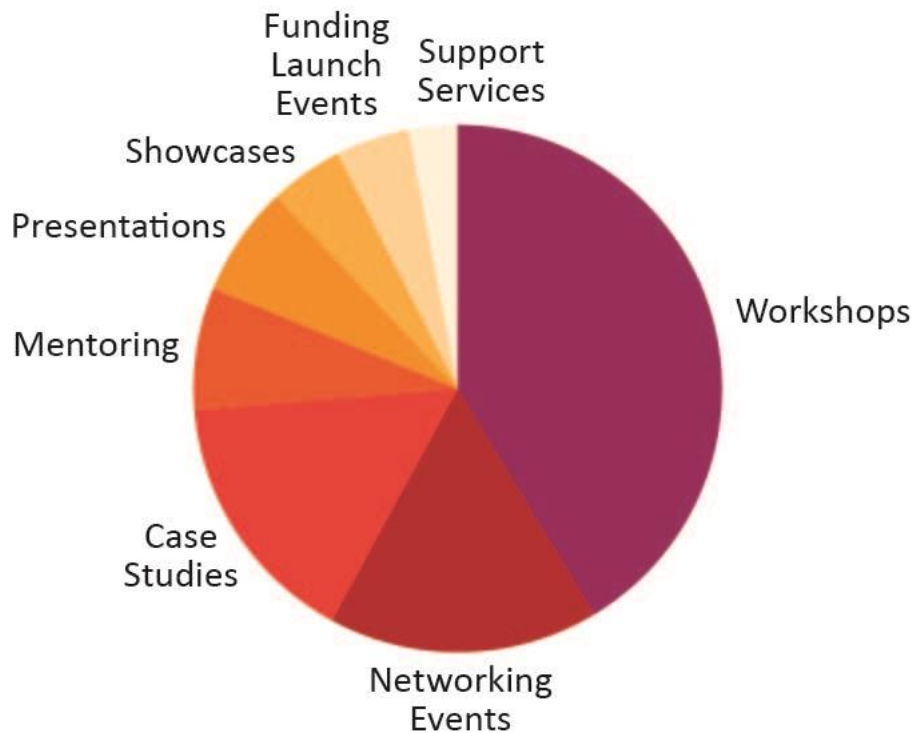


Figure 5. Results of the data analysis in relation to what the Next Generation of Design Researchers want in the future

Almost half of the NGDRs who responded to our feedback questionnaire would like individual higher education institutions (HEIs) to organise hands-on participatory workshops, sandpits, boot-camps, etc. These could be aimed at: *“...bringing together researchers and spending time authoring/brainstorming specific ideas for bids”* and *“...going through the application form, learning the language, sharing hacks, common mistakes, peer learning through the process”*. The NGDRs envisage this as an opportunity to also engage with experts in a mock panel to review research project proposals. Less than a quarter of our sample of NGDRs expressed their willingness to participate at networking events with peer researchers from other universities across the UK or from institutions not already engaged with the AHRC, working in similar research areas as well as in other fields (e.g. engineering, sciences, etc.) in order to write collaborative bids and identify potential partners. Such events could be *“...regional and conducted on a fairly regular basis”* as requested by one NGDR. Less than a quarter of NGDRs would also like to see case studies from other researchers who have been successful in their grant applications or whose bids have been rejected. They envisage this as an opportunity to see examples of research project proposals that *“...go more into the nitty gritty of funding applications”* to learn about bid writing styles and understand how to better articulate their pathways to impact. One of the NGDRs stated that: *“...sharing successful funding stories would be useful to understand the journey from application to delivery”*, and another expressed a willingness to: *“...see not only how success was achieved in funding, but also how failure could be used to learn about the funding process”*.

Beyond one-off group events, some NGDRs would also like to receive long-term, one-to-one mentoring and training to help them in their personal and research development. Several NGDRs would like to attend presentations from experts in specific disciplines or from members of the AHRC review panel unravelling the research funding schemes in more detail, clarifying the particularities of diverse funding calls, and explaining why some projects have been awarded or not.

An opportunity to curate showcases of design research processes and outcomes also emerged from a relatively small portion of our sample of NGDRs. A small number of NGDRs would also like to attend events themed on highlight funding calls or priority areas “...when they are launched or to contribute to their formation”. A few NGDRs would like to receive further support services from their host institutions in order to gain more awareness and confidence in their academic career development. Such a request for support emerged especially for mature researchers returning to academia after a long industry experience, for those with learning difficulties, and those who struggle to balance their teaching workloads with their research duties.

4. Findings

The findings from the analysis of the near 200 responses we collected show that the future research interests of the NGDRs generally lie in social design practice adopting participatory design approaches within health and wellbeing contexts. This finding confirms the widespread turn towards the “social” in both design research and practice, as highlighted by Armstrong *et al.* (2014). Conversely, Tonkinwise (2014) challenges the concept of “social design” as a disciplinary field in line with Markussen (2017) who argues that there is a lack of understanding of how “social design” differs from similar approaches such as “social innovation” and “social entrepreneurship”. The findings from our study show a strong interest in conducting further research in the area of “social design” and positioning it more firmly within the wider design landscape. Another significant research interest that emerged from our study lies within the field of fashion and textiles design. This is important considering that the field of fashion design research is relatively young (Beward, 2003) and that fashion design education has changed considerably in recent years (Faerm, 2012) in response to the exponential increase of the impact of fashion’s industrial activity in environmental, social, cultural, and economic terms (Williams, 2018). Other recurring interests for future research span from design thinking, history and heritage, place, communication, design products and processes, technological innovations, sustainability, through to sciences, as well as issues of identity, data and ethics. In particular, the NGDRs are also concerned with the ethical implications of the design of products, services, and strategies. This area of research has its roots in Papanek’s (1972) view of design as a socially-engaged practice, but design researchers have recently been expanding the scope of their research and practice beyond the more traditional remits of design to issues related to policy, health, cultural diversities, etc. Although we have witnessed an increase in service design research and practice in recent years across several different domains and within commercial organisations (Sangiorgi and Prendiville, 2017), our sample of NGDRs did not explicitly express a strong interest in contributing to future service design research projects.

Through the analysis of the feedback we collected from our workshop participants, the issues that the NGDRs need help with emerged. While we can clearly conclude that NGDRs do not lack research ideas, they expressed a strong need for training in bid writing and practical support in structuring their research proposals. They also wished to see examples of successful or rejected grant applications in order to better understand what to include in a bid and to understand better the language to use for raising their chances of a successful application. Alongside this, the NGDRs highlighted a need for receiving mentoring to support their development from PhD to ECR through to their first academic appointment. Moreover, in line with the current increase of design research and practice cutting across disciplinary and methodological boundaries (Saunders, 2006), the findings from our study highlighted an opportunity for developing a series of networking events aimed at helping NGDRs to meet others from different backgrounds, institutions and locations. The study also elicited the NGDRs’ research ideas for the future, especially in relation to hands-on, participatory

workshops for writing bids, networking events, case studies, showcases, and long-term mentoring. Interestingly, we received no request for support from staff with disabilities. This is somewhat surprising considering the widespread incidence of dyslexia amongst designers (Design Council, 2018). Furthermore, while a relatively large number of NGDRs commented on stressful workloads where they are faced with juggling teaching and research commitments, they did not explicitly request more time for undertaking their research projects, nor did they articulate a need for greater levels of funding. Instead, the study highlighted a desire for smaller and more accessible funding schemes for NGDRs, to tackle head-on the difficulties they face in accessing research funding. Due to the clear demand for networking opportunities that emerged from our NGDR workshops, we believe that networking grants for NGDRs would be very helpful.

Taking into consideration some of the above-mentioned challenges and opportunities for the next generation of design researchers, we have unpicked how the AHRC might work better with the design community and other funding bodies in order to enhance the quality and quantity of design research in the UK. For instance, from the analysis of the feedback we received, a need for improving the electronic grant application form (*i.e.* Je-S form), and making the funding guides more accessible emerged, together with an opportunity for producing further resources (such as videos and illustrations) to be more ECR-friendly. Finally, given the high demand for mentoring, we envisage an opportunity for developing awareness campaigns and case studies of researchers who have been successful in their personal development and planning of their academic careers for NGDRs.

5. Conclusions

In this paper we have reported on a series of workshops conducted as part of the first author's ongoing AHRC Design Leadership Fellowship. The UK enjoys a global reputation for the quality of its design education and research and one aim of the first author's Fellowship is to explore how this excellent design research can drive innovation and ensure the UK's continuing international significance and impact. Through a comprehensive series of ten workshops held across the UK, we have collected feedback from a large sample of design researchers. This has provided us with an up-to-date and wide-ranging picture of the next generation of design researchers in the UK, which highlights the research they are undertaking as highly collaborative, innovative, with extensive social, cultural, and economic impact. The feedback collected included the NGDRs' individual and collective interests for future research opportunities that included a clear desire for more social design and sustainable fashion design projects. The paper also raises a number of issues for universities, funding bodies, and other collaborators regarding the processes involved in applying for design research funding. Moreover, the paper indicates a number of key opportunities for supporting better the next generation of design researchers through activities that will improve their chances of securing funding to conduct their future research projects.

This study has allowed us to draw a comprehensive picture of the next generation of design researchers, their needs and future wants. Although we planned the locations of the ten NGDR workshops in a way to ensure a fair reach of design researchers across the UK, we acknowledge that the findings from this study may have been influenced from the research areas predominant in the host institutions. Moreover, considering the time and resource constraints we had, further work is needed to gather more in-depth insights into specific needs and opportunities for the next generation of design researchers to better inform future strategies for supporting them. We also acknowledge that this study has a focus solely on UK design research and does not examine how UK government-funded research might transfer elsewhere. Furthermore, investigating the links between

design research and educational systems (with its taught subjects and nurtured skills) and professional practice lie outside the scope of this paper.

5.2 Future Work

Taking into consideration the feedback we collected from the next generation of design researchers, we have addressed some of their needs, especially in relation to bid writing. Recently, we have conducted two follow-up workshops aimed at helping design researchers to think about the overall structure of an AHRC funding proposal and to better understand how to allocate their time and resources, considering what is both ambitious but also feasible. These Bid Writing workshops have been facilitated by AHRC staff and senior design researchers with significant experience in reviewing funding applications. The workshops have led to a number of positive outcomes for the next generation of design researchers especially as many of them have little knowledge or experience of successfully managing a funded research project and may never have dealt with recruiting staff or managing expectations before. In the Bid Writing workshop, participants were provided with a series of designed tools visually representing a generic timeline of a project on which they were asked to indicate their major milestones (Figure 6) and were facilitated in shaping their research proposals by selecting from a range of possible outputs to be achieved given the project constraints. The Bid Writing tools are also useful for the NGDRs participating in the workshops to develop a better understanding of who to look for when seeking potential partners by identifying knowledge and experience gaps. The Bid Writing workshops have also helped the NGDRs to frame their research questions and select from a range of methods for their projects.

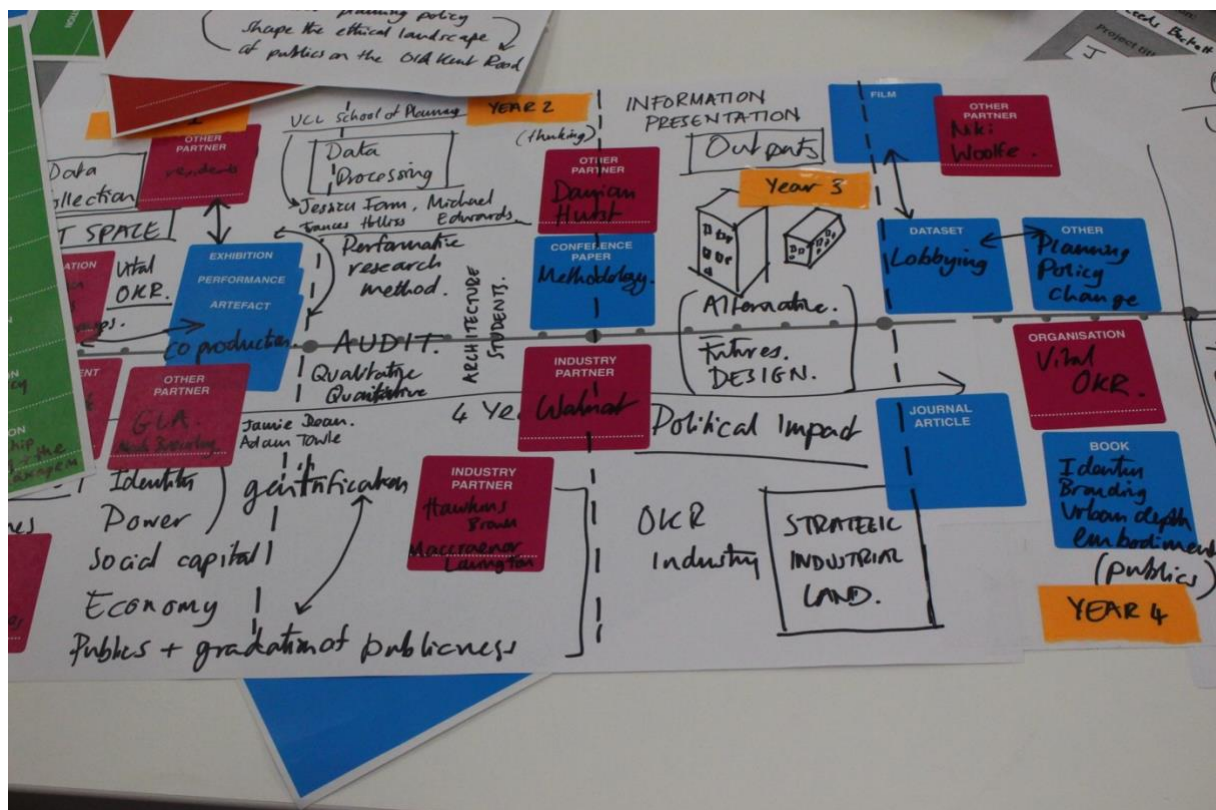


Figure 6. NGDR Bid Writing Tools

Moreover, the Bid Writing workshops we held have enabled excellent networking opportunities, especially since we collected information about each NGDR's research interests prior to the workshop and shared this with the group of participants during the open networking activity at the

beginning of each workshop. Finally, building on the positive feedback from all of the workshops we have held thus far, we envisage that the AHRC will now adopt a more active role in running workshops such as these and others in the future, involving a wider number of members from their development teams in training the rapidly growing community of NGDRs in the UK.

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Acknowledgements: The authors gratefully acknowledge the support of the Arts and Humanities Research Council (AHRC) in this work. The first author is the current AHRC Design Leadership Fellow in the UK and is funded under the AHRC’s Design Priority Area Leadership Fellowship scheme (Award Ref: AH/P013619/1). We would also like to thank all of the Early Career Design Researchers who have participated at our Next Generation Design Research workshops and provided us with invaluable feedback and advice.